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	Revised Report

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Report Date: 09-Oct-18 16:16

Laboratory Report SC50648

Gulf Oil L.P. 281 Eastern Avenue Chelsea, MA 02150 Attn: Andrew P. Adams

Project: Gulf Terminal - Chelsea, MA

Project #: [none]

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110 Connecticut # PH-0777 Florida # E87936 Maine # MA138 New Hampshire # 2972/2538 New Jersey # MA011 New York # 11393 Pennsylvania # 68-04426/68-02924 Rhode Island # LAO00348 USDA # P330-15-00375 Vermont # VT-11393



Authorized by:

Dawn Wojcik Laboratory Director

Jawn & Woscik

Please note that this report contains 3 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

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Sample Summary

Work Order: SC50648

Project: Gulf Terminal - Chelsea, MA

Project Number: [none]

Laboratory ID	Client Sample ID	<u>Matrix</u>	Date Sampled	Date Received
SC50648-01	Outfall 003	Surface Water	20-Sep-18 11:50	20-Sep-18 14:05
SC50648-02	Creek	Surface Water	20-Sep-18 12:05	20-Sep-18 14:05

CASE NARRATIVE:

Please note this report contains 30 pages of analytical data from New England BioAssay.



GEOTECHNICAL

ENVIRONMENTAL

ECOLOGICAL

....

CONSTRUCTION

77 Batson Drive Manchester, CT 0604 T: 860.643.9560 F: 860.646.7169



ACUTE AQUATIC TOXICITY TEST REPORT

Gulf Oil Terminal Chelsea, MA

Test Start Date: September 20, 2018

Test Period: September 2018

Report Prepared by:

New England Bioassay A Division of GZA GeoEnvironmental, Inc. 77 Batson Dr. Manchester, CT 06042

NEB Project Number: 05.0045469.00

Report Date: October 9, 2018

Report Submitted to:

Eurofins Spectrum Analytical, Inc. 11 Almgren Drive Agawam, MA 01001

Sample ID: SC50648-01 / 02

This report shall not be reproduced, except in its entirety, without written approval of New England Bioassay (NEB). NEB is the sole authority for authorizing edits or modifications to the data contained in this report. Test results relate only to samples analyzed. Please contact the Lab Manager, Kimberly Wills, at 860-858-3153 or kimberly.wills@gza.com if you; have any questions concerning these results.

Whole Effluent Toxicity Testing Report Instruction Form

Cheft Name/Project. Euronins / Gun On Terminar Test Date. 9/20/18
Sample ID: <u>SC50648-01 / 02</u>
Your results were as follows:
Monitoring Only
□ Fail – Please proceed according to the instructions in your permit.
□ Invalid - Retesting is still required. Retest report will be sent at a later date under separate cover.
□ Original Test Invalid - Valid retest performed. Both test and retest results are attached.
☐ Retesting will be or has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.
This is your case of dilution water toxicity. Please proceed according to the Case 2 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water. The alternate dilution water you select for future tests for this species should be described as follows: "synthetic laboratory water made up according to EPA's toxicity test protocols, by adding specified amounts of salts into deionized water in order to match the hardness of our receiving water." Writing this letter should help you to avoid retests in the future.
□ Available information is insufficient to determine whether this test passed or failed. Please compare results to your permit limits. Please submit a current copy of your permit to the NEB Lab so that we can determine the status of future tests results and help ensure your compliance with permit requirements.
Please complete the items on this list before reporting these results according to the instructions in the "Monitoring and Reporting" Section of your permit.
• Please complete, sign and date the upper portion of the "Whole Effluent Toxicity Test Report Certification" page which is the page directly following this page.
• Fill in the Sample Type and Sample Method (upper right) and the Permit Limits (lower left) on the New England Bioassay - EPA Toxicity Test Summary Sheet(s) if they are incomplete.
Fill in any missing information on the NEB Chain-of-Custody documents. This includes ensuring that the following information is recorded: Sampler's name and title, Facility name and address, Sample collection methods, Sample collection start and end dates and times, Types of sample, Chlorination status of samples upon shipment to NEB, Site description and Sample collection procedures.
Monitoring results should be summarized on your monthly Discharge Monitoring Report Form.

Questions? Please contact the Lab Manager, Kim Wills, at (860) 858-3153 or kimberly.wills@gza.com.

Signed and dated originals of this report must be submitted to the State (and Federal) Agencies

2 of 30

specified in the "Monitoring and Reporting" section of your permit.

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Permittee)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on	[Date]	[Authorized Signature]
		[Print or Type Name and Title]
		[Print or Type the Permittee's Name]
		[Print or Type the NPDES Permit No.]

Since the WET test and report check is complicated, the New England Bioassay Aquatic Toxicity Laboratory has certified the validity of the WET test data in the section below. Please note that this does not relieve the permittee from its responsibility to sign and certify the report under 40 C.F.R. S 122.41(k).

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on

Date

Authorized Signature

Kim Wills, Laboratory Manager

[Print or Type Name and Title]

New England Bioassay

[Print or Type Name of Bioassay Laboratory]

24. Telephone Contacts

If you have questions, please contact Joy Hilton, Water Technical Unit, at (617) 918-1877 or David McDonald, Ecosystem Assessment Unit, at (617) 918-8609.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET

Facility Name: Gulf O	il Terminal	Test Start Date:	9/20/18	
NPDES Permit Number	r:MA0001091	Outfall Number:	003	
Test Type	Test Species	Sample Type	Sample Method	
X Acute	_ Fathead Minnow	_ Prechlorinated	X Grab	
Chronic	Ceriodaphnia Dubia	Dechlorinated	_ Composite	
Modified		Unchlorinated	Flow-thru	
(Chronic reporting	X Mysid Shrimp	Chlorinated	Other	
(Circline reporting	Sheensheed	= Citior mated	_ Other	
LC50 values) _24-Hour Screening	_ Menidia			
_ 24-Hour Screening	= Nienidia	TTD C		
		TRC conc. <u>0.175</u> mg/L		
	Selenastrum			
	_Other			
Dilution Water				
X Receiving water coll	lected at a point immediate	ely upstream of or away from	the discharge;	
		Chelsea River		
		a hardness to generally reflec		
		u naraness to generally reflec		
Complete a victor man	and using sith an Millingua	Mill O an aguivalent daisnis	und system and	
_ Synthetic water prepare	ared using either Millipore	Mill-Q or equivalent deioniz	zed water and	
		mbined with mineral water;		
	ixed with deionized water;			
_Other				
Effluent Sampling Date	e(s):9/20/18_			
	s Tested (in%):0 _6.2 t Concentration):t	5 12.5 25 50 100		
(1 CHILL DIIII)	Concentration).	momentum only		
Was effluent salinity ac	ljusted? Yes If yes, to	what value? 25 ppt		
Reference Toxicant test	t date: 10/1/18 R	eference Toxicant Test Accep	otable: Yes X No_	
Age and Age Range of	Test Organisms 3 days	s (< 24 hours) Source of Orga	nisms <u>NEB</u>	
	TEST RESULTS &	PERMIT LIMITS		
		pility Criteria		
	Test Acceptat	omty Criteria		
A Country Water Co	-41			
A. Synthetic Water Cor		M. C. I.D. I.	DT/A	
Mean Control Survival:		Mean Control Reproduction:		
Mean Control Weight:	N/A	Mean Control % Fertilization	: <u>N/A</u>	
B. Receiving Water Co				
Mean Control Survival:	100%	Mean Control Reproduction:	N/A	
Mean Control Weight:	N/A	Mean Control % Fertilization	: _N/A	
C. Lab Culture Control	Yes_ No X			
D. Thiosulfate Control	Yes_ No X			
ř.	Test Variability			
Toot DMCD (amandle)	NI/A	**		
Test PMSD (growth)	N/A	41		
Test PMSD (reproducti	on.) <u>N/A</u>	1 1		
±.		" ut		

Permit Limits & Test Results

	Limits		Results
LC50	N/A	LC50	>100%
		Upper Value	± ∞
		Lower Value	100%
		Data Analysis	
		Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	N/A
		LOEC	N/A
IC25	N/A	IC25	
IC50	N/A	IC50	

PMSD Comparison Discussion - N/A

Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

- X 1. Ideal concentration-response relationship
- _ 2. All or nothing response
- _ 3. Stimulatory response at low concentrations and detrimental effects at higher concentrations
- 4. Stimulation at low concentrations but no significant effect at higher concentrations
- 5. Interrupted concentration-response: significant effects bracketed by non-significant effects
- _ 6. Interrupted concentration-response: non-significant effects bracketed by significant effects
- _ 7. Significant effects only at highest concentration
- 8. Significant effects at all test concentrations but flat concentration-response curve
- 9. Significant effects at all test concentrations with a sloped concentration-response curve
- _ 10. Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

- \underline{X} 1. Results are reliable and should be reported.
- _ 2. Results are anomalous. An explanation is provided in the body of the report.
- _ 3. Results are inconclusive and the test should be repeated with a newly collected sample. An explanation is provided in the body of the report.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET

Facility Name: Gulf C	Oil Terminal	Test Start Date:	9/20/18
	er:MA0001091	Outfall Number:	003
Test Type X Acute Chronic	Test Species _ Fathead Minnow _ Ceriodaphnia Dubia	Sample Type Prechlorinated Dechlorinated	Sample Method X Grab Composite
Modified	_ Daphnia Pulex	Unchlorinated	Flow-thru
(Chronic reporting		Chlorinated	Other
LC50 values)	Sheepshead	_ Cinormated	Culot
_ 24-Hour Screening	Y Menidia		
_ 24-110ui Screening	Sea Urchin	TRC conc. <u>0.175</u> mg/L	
	Selenastrum	TRE cone. <u>0.173</u> mg/L	
	Other		
Dilution Water	_Ouici		
	lected at a point immediate	ely upstream of or away from	the discharge:
		Chelsea River	
Alternate Surface W	ater of known quality and	a hardness to generally reflec	t the characteristics
	/O O		`
Synthetic water prep	ared using either Millingre	Mill-Q or equivalent deioniz	zed water and
reagent grade chemic	eals: or deignized water cor	nbined with mineral water;	Lea water and
	ixed with deionized water;		
_	mad with defonized water,		
= onioi_			
Effluent Sampling Date	e(s): 9/20/18		
Elitaria sampinia sai	(s)		
	s Tested (in%): 0 6.2 t Concentration): monito	5 12.5 25 50 100 oring only	
Was effluent salinity ac	djusted? Yes If yes, to	what value? 25 ppt	
		eference Toxicant Test Accep	_
Age and Age Range of	-	(<24 hours) Source of Org	ganisms <u>A.I.</u>
	TEST RESULTS &		
	Test Acceptab	oility Criteria	
A. Synthetic Water Co. Mean Control Survival		Mean Control Reproduction:	N/A
Mean Control Weight:		Mean Control % Fertilization	
Weight.	17/11	Tradit Condot /0 1 Of this attor	•
B. Receiving Water Co	ontrol		
Mean Control Survival		Mean Control Reproduction:	N/A
Mean Control Weight:		Mean Control % Fertilization	
· · · · · · · · · · · · · · · · · · ·			1
C. Lab Culture Control	Yes_ No X		
D. Thiosulfate Control			
	Test Var	riability	
İ		1	
Test PMSD (growth)	<u>N/A</u>		
Test PMSD (reproduct	ion.) <u>N/A</u>	1 F 7	
Ē		, 1	

Permit Limits & Test Results

	<u>Limits</u>		Results
LC50	N/A	_ LC50	>100%
		Upper Value	± ∞
		Lower Value	100%
		Data Analysis	
		Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	N/A
		LOEC	N/A
IC25	N/A	IC25	
IC50	N/A	IC50	

PMSD Comparison Discussion - N/A

Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

$\underline{\mathbf{X}}$	1.	Ideal concentration-response relationship
_	2.	All or nothing response
_	3.	Stimulatory response at low concentrations and detrimental effects at higher concentrations
_	4.	Stimulation at low concentrations but no significant effect at higher concentrations
		Interrupted concentration-response: significant effects bracketed by non-significant effects
_	6.	Interrupted concentration-response: non-significant effects bracketed by significant effects
_	7.	Significant effects only at highest concentration
_	8.	Significant effects at all test concentrations but flat concentration-response curve
_	9.	Significant effects at all test concentrations with a sloped concentration-response curve
_	10.	Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

and the following determination was made:	
\underline{X} 1. Results are reliable and should be reported.	
2. Results are anomalous. An explanation is provided in the body of the report.	

_ 3. Results are inconclusive and the test should be repeated with a newly collected sample. An

explanation is provided in the body of the report.

MYSIDOPSIS BAHIA AQUATIC TOXICITY TEST REPORT

<u>Test Reference Manual</u>: EPA 821-R-02-012, "Methods for Measuring the Acute Toxicity of

Effluents and Receiving Waters to Freshwater Organisms and

Marine Organisms", Fifth Edition

Test Method: Mysidopsis bahia Acute Toxicity Test – Method 2007.0

Test Type: Acute Static Non-Renewal Saltwater Test

Salinity: 25 ppt \pm 10% for all dilutions by dry ocean salts (Instant Ocean)

Temperature: $25 \pm 1^{\circ}$ C

<u>Light Quality</u>: Ambient Laboratory Illumination

Photoperiod: 16 hours light, 8 hours dark

Test Chamber Size: 250 mL

Test Solution Volume: Minimum 200 mL

Age of Test Organisms: 3 days

Number of Mysids

Per Test Chamber: 10

Number of Replicate Test

Chambers Per Treatment: 4

Total Number of Mysids

Per Test Concentration: 40

Feeding Regime: Light feeding using concentrated *Artemia* nauplii while holding

prior to initiating the test.

Aeration: None

Dilution Water: Chelsea River

Alternate Control Water: NEB Artificial Salt Water (salinity 25 ppt)

Effluent Concentrations: 0%, 6.25%, 12.5%, 25%, 50% and 100% effluent

Test Duration: 48 hours

Effect measured: Mortality – no movement of body appendages on gentle prodding.

<u>Test Acceptability:</u> $\geq 90\%$ survival of test organisms in control solution Yes X No

<u>Sampling Requirements:</u> Samples first used within 36 hours of collection Yes \underline{X} No

Sample Volume Required: Minimum 2 liters

Test Organism Source: New England Bioassay

Test Acceptability Criteria	: Mean Alternate Water Contro Mean Dilution Water Contro			
Test Results:	L	imits	Results	
	48-hour LC50 Upper Value Lower Value Data Analysis Method Used A-NOEC	N/A	$>100\%$ $\pm \infty$ 100% Graphical 100%	
Reference Toxicant Data:	Date: Toxicant: Dilution Water: Toxicant Source: Organism Source: 48-hour LC50: In Acceptable Range:	NEB AND NEW ENDINGER 19.6	n Dodecyl Sulfate rtificial Salt Water ngland Bioassay ngland Bioassay ngland Bioassay No	
Dechlorination Procedures	: Chlorine is measured using	4500 CL-G	DPD Colorimetric Method	od.
\underline{X} Dechlorination was not re-	quired.			
Since dechlorination of the e	by adding sodium thiosulfate teffluent was necessary, a thiostalso included in the test series	ulfate contro	ol of diluent water spiked	
\underline{X} Chlorine Measurement in $\underline{mg/L}$ when measured using	the effluent was elevated due amperometric titration.	to interferei	nce. Chlorine was <u><0.05</u>	
	s re-measured following aerat Conditions Affecting the Tes		is found to be mg/I	
				_
1				
-				_
				_
				_
	v		W	_
	-l			
			- 1 1	

MENIDIA BERYLLINA AQUATIC TOXICITY TEST REPORT

Test Reference Manual: EPA 821-R-02-012, "Methods for Measuring the Acute Toxicity of

Effluents and Receiving Waters to Freshwater Organisms and

Marine Organisms", Fifth Edition

Test Method: Menidia beryllina Acute Toxicity Test – Method 2006.0

<u>Test Type</u>: Acute Static Non-Renewal Saltwater Test

Salinity: 25 ppt \pm 2 ppt by adding dry ocean salts (Instant Ocean)

Temperature: 25 ± 1 °C

<u>Light Quality</u>: Ambient Laboratory Illumination

Photoperiod: 16 hours light, 8 hours dark

Test Chamber Size: 250 mL

Test Solution Volume: Minimum 200 mL/replicate

Age of Test Organisms: 11 days old (24 hour age range)

Number of Fish Per

Test Chamber: 10

Number of Replicate Test
Chambers Per Treatment: 4

Total Number of Organisms
Per Test Concentration: 40

Feeding Regime: Light feeding using concentrated Artemia nauplii while holding

prior to initiating the test.

Aeration: None

Dilution Water: Chelsea River

Alternate Control Water: NEB Artificial Salt Water (salinity 25 ppt)

Effluent Concentrations: 0%, 6.25%, 12.5%, 25%, 50% and 100% effluent

Test Duration: 48 hours

Effect measured: Mortality – no movement on gentle prodding.

<u>Test Acceptability:</u> $\geq 90\%$ survival of test organisms in control solution Yes \underline{X} No_

<u>Sampling Requirements:</u> Samples first used within 36 hours of collection Yes X No_

Sample Volume Required: Minimum 2 liters

Test Organism Source: Aquatic Indicators

<u>Test Acceptability Criteria</u>: Mean Alternate Water Control Survival = <u>100%</u>

Mean Dilution Water Control Survival = 97.5%

Test Results:		<u>Limits</u>	Results
	48-hour LC50 Upper Value Lower Value Data Analysis Method Use A-NOEC	N/A d	$ \begin{array}{r} $
Reference Toxicant Data:	Date: Toxicant: Dilution Water: Toxicant Source: Organism Source: 48-hour LC50: In Acceptable Range	NEB A New En Aquation 7.55	n/18 n Dodecyl Sulfate rtificial Salt Water ngland Bioassay e Indicators mg/L No
Dechlorination Procedures	: Chlorine is measured usin	g 4500 CL-G	DPD Colorimetric Method.
\underline{X} Dechlorination was not re-	quired.		
Sample was dechlorinated by Since dechlorination of the ewith sodium thiosulfate was dechlorinated sample.	ffluent was necessary, a thic	sulfate contr	ol of diluent water spiked
_Chlorine Measurement was filtered sample.	elevated due to interference	e. Chlorine w	/as mg/L in a
_ Total Residual Chlorine wa	s re-measured following aer	ation, and wa	as found to be mg/L.
Additional Notes or Other	Conditions Affecting the T	'est:	
-			
			11
			- 1/

NEW ENGLAND BIOASSAY ACUTE TOXICITY DATA FORM COVER SHEET FOR LC50 TESTS

CLIENT:	Eurofins Spec	ctrum Analytical		M.bahia TEST ID#	18-1422a
ADDRESS:		gren Drive		M.beryllina TEST ID#	18-1422b
,		, MA 01001		COC#	c38-3632/33
SAMPLE TYPE:		al - Chelsea, MA		PROJECT#	05.0045469.00
DILUTION WATER:	Chels	ea River		i.	
Sample Date(s):	9/2	20/18	Received On:	9/20/1	8
INVE	RTEBRATES			VERTEBRATES	
TEST SE	Г UP (TECH INIT)	DD		TEST SET UP (TECH INIT)	PD
	TEST SPECIES	Mysidopsis bahia		TEST SPECIES	Menidia beryllina
	NEB LOT#	Mb18(9-17)		NEB LOT#	Ss18AI(9-18)
	AGE	3 days		AGE	11 days
TEST SOLUTIO	N VOLUME (mls)	200	TEST	SOLUTION VOLUME (mls)	700
NO. ORGANISMS PER	TEST CHAMBER	10	NO. ORGANI	SMS PER TEST CHAMBER	10
NO. ORGANISMS PER CO	ONCENTRATION	40	NO. ORGANISM	MS PER CONCENTRATION	40
NO. ORGANISM	S PER CONTROL	40	NO. OF	RGANISMS PER CONTROL	40
	DATE	TIME		DATE	TIME
TEST START:	9/20/18	1556	TEST START:	9/20/18	1559
TEST END:	9/22/18	1615	TEST END:	9/22/18	1611
LABORATORY CONTRO	NEB BATCH#		Salinity (ppt) 25	Alkalinity (mg/L CaCO ₃₎ 120	
RESULTS OF Mys	<u>sidopsis bahia</u> I	LC50 TEST	RESULTS OF	Menidia beryllina LC5	<u>0 TEST</u>
METHOD	LC50 (%)	95% Confidence Limits	METHOD	LC50 (%)	95% Confidence Limits
BINOMIAL/GRAPHICAL	>100%	100%±∞	BINOMIAL/GRAPHICAL	>100%	100%±∞
PROBIT			PROBIT		
			1		
SPEARMAN KARBER			SPEARMAN KARBER		
NOAEL	100%	A SELECTION	NOAEL	100%	如可能所能的生命的
NOEC: NO OBSERVAE	BLE EFFECT C	ONCENTRATION	1		
Comments:					
REVIEWD BY:			1/15	DATE:	10/9/18
					1

NEW ENGLAND BIOASSAY Toxicity Test Data Sheet

NEB Test #:	18-1422a	Test Organism:		Mysidopsis b	ahia
Project #:	05.0045469.00	Organism Age:		3	days
Facility Name:	Gulf Terminal - Chelsea, MA	Test Duration:	48	(hours)	
Date Sampled:	9/20/18	Beginning Date:	9/20/18	Time:	1556
Date Received:	9/20/18	Dilution Water S	Source:	Chelsea	a River
Sample ID:	Outfall 003	Salinity:	;	27	ppt

Effluent Conc. %		lumber o Survivin Organisn	g		issolve Oxyger (mg/L)		Те	mperati (°C)	ure		pH (su)			Salinity (ppt)	
Initials	0	TBP	PD	PD	DD	cw	PD	DD	CW	PD	DD	cw	PD	DD	cw
THE RESERVE	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control A	10	10	10	7.3	6.5	5.4	25.0	24.0	24.0	8.0	8.0	7.9	25	25	26
Control B	10	10	10		6.6	5.2		24.0	24.0		8.0	7.9		25	26
Control C	10	10	10		6.5	5.1		24.0	24.0		8.0	7.9		25	26
Control D	10	10	10		6.5	5.1		24.0	24.0		8.0	7.9		26	26
Diluent A	10	10	10	7.3	6.5	5.2	26.0	24.0	24.0	7.7	7.9	7.8	27	28	28
Diluent B	10	10	10		6.4	5.2		24.0	24.0		7.9	7.8		28	28
Diluent C	10	10	10		6.5	5.2		24.0	24.0		7.9	7.8		28	28
Diluent D	10	10	10		6.5	5.1		24.0	24.0		7.9	7.8		28	28
6.25 A	10	10	10	7.3	6.5	5.4	25.9	24.0	24.0	7.8	7.9	7.7	27	27	28
6.25 B	10	10	10		6.5	5.1		24.0	24.0		7.9	7.7		27	28
6.25 C	10	10	10		6.4	5.1		24.0	24.0		7.9	7.7		27	28
6.25 D	10	10	10		6.4	5.1		24.0	24.0		7.9	7.7		28	28
12.5 A	10	10	10	7.2	6.5	5.2	26.0	24.0	24.0	7.8	7,9	7.8	27	27	28
12.5 B	10	10	10		6.5	5.3		24.0	24.0		7.9	7.8		27	28
12.5 C	10	10	10		6.5	5.2		24.0	24.0		7.9	7.8		27	28
12.5 D	10	10	10		6.5	5.2		24.0	24.0		7.9	7.8		28	28
25 A	10	10	10	7.2	6.5	5.2	26.0	24.0	24.0	7.8	7.9	7.8	26	27	28
25 B	10	10	10		6.5	5.1		24.0	24.0		7.9	7.8		27	27
25 C	10	10	10		6.5	5.1		24.0	24.0		7.9	7.8		27	27
25 D	10	10	10		6.5	5.0		24.0	24.0		7.9	7.8		27	28

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

NEW ENGLAND BIOASSAY Toxicity Test Data Sheet

NEB Test #:	18-1422a	Test Organism:	<i>M</i> y	rsidopsis ba	nhia
Project #:	05.0045469.00	Organism Age:	•	3	days
Facility Name:	Gulf Terminal - Chelsea, MA	Test Duration:	48	(hours)	
Date Sampled:	9/20/18	Beginning Date:	9/20/18	Time:	1556
Date Received:	9/20/18	Dilution Water S	Source:	Chelsea	River
Sample ID:	Outfall 003	Salinity:	27		ppt

Effluent Conc. %		lumber o Survivin Organisn	g		issolve Oxyger (mg/L)	1	Те	mperati (°C)	ure		pH (su)			Salinity (ppt)	1
Initials	0	TBP	PD	PD	DD	CW	PD	DD	CW	PD	DD	cw	PD	DD	cw
10000	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
50 A	10	10	10	7.2	6.5	5.0	25.9	24.0	24.0	7.9	8.0	7.8	25	26	27
50 B	10	10	10		6.5	4.9		24.0	24.0		8.0	7.8		26	27
50 C	10	10	10		6.6	4.9		24.0	24.0		8.0	7.8		26	27
50 D	10	10	10		6.5	4.9		24.0	24.0		8.0	7.8		26	27
100 A	10	10	10	7.3	6.4	5.0	25.8	24.0	24.0	8.0	8.1	7.9	24	24	25
100 B	10	10	10		6.4	5.0		24.0	24.0		8.1	7.9		24	25
100 C	10	10	10		6.3	5.1		24.0	24.0		8.1	8.0		24	25
100 D	10	10	10		6.3	5.1		24.0	24.0		8.1	8.0		24	25
	ļ														
	<u> </u>														

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

Report Date: Test Code/ID: 08 Oct-18 14:46 (p 1 of 2) 18-1422a / 15-1817-3363

								Te	st Code/ID:		18-1422a /	15-1817-336
Mysido	psis 9	6-h Acute Surviv	al Test							ı	New Engla	nd Bioassay
Analysi	is ID:	16-8242-5088	Enc	lpoint:	48h Survival F	Rate		CE	TIS Version	CETISV	1.9.4	
Analyz		08 Oct-18 14:46	Ana	lysis:	Linear Interpo	lation (ICPIN	I)	Sta	atus Level:	1		
Batch I	D:	02-5224-6727	Tes	t Type:	Survival (48h)			An	alyst:			
Start D	ate:	20 Sep-18 15:56) Pro	tocol:	EPA/821/R-02	2-012 (2002)		Dil	uent: Re	ceiving Wat	ter	
Ending	Date:	22 Sep-18 16:15	Spe	cies:	Mysidopsis ba	hia		Br		tant Ocean		
Test Le	ength:	48h	Tax	on:	Malacostraca			So	urce: In-l	House Culti	ure	Age: 3 c
Sample	D:	18-9760-4044	Cod	le:	711B23CC			Pre	oject:			
Sample	Date:	20 Sep-18 11:50) Mat	erial:	Not Applicable)		So	urce: Gu	lf Oil Termi	nal (MA000	1091)
Receip	t Date:	20 Sep-18 14:05	CAS	S (PC):				Sta	ation:			
Sample	Age:	4h	Clie	nt:	Eurofins							
Linear	Interpo	olation Options										
X Trans	sform	Y Transform	See	d	Resamples	Exp 95%	CL Meti	nod				
Log(X)		Linear	115	8728	200	Yes	Two	-Point Inte	rpolation			
Point E	stimat	tes										
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
LC50	>100	n/a	n/a	<1	n/a	n/a						
48h Su	rvival	Rate Summary				Calcu	ulated Varia	ite(A/B)			Isoto	nic Variate
Conc-%	6	Code	Count	Mean	n Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effec
0		D	4	1.000		1.0000	0.0000	0.00%	0.0%	40/40	1	0.0%
6.25			4	1.000		1.0000	0.0000	0.00%	0.0%	40/40	1	0.0%
12.5			4	1.000		1.0000	0.0000	0.00%	0.0%	40/40	1	0.0%
25			4	1.000		1.0000	0.0000	0.00%	0.0%	40/40	1	0.0%
50			4	1.000		1.0000	0.0000	0.00%	0.0%	40/40	1	0.0%
100			4	1.000	1.0000	1.0000	0.0000	0.00%	0.0%	40/40	1	0.0%
48h Su	rvival (Rate Detail										
Conc-%	6	Code	Rep 1	Rep 2		Rep 4						
0	2	D	1.0000	1.000		1.0000						
6.25			1.0000	1.000		1.0000						
12.5			1.0000	1.000		1.0000						
25			1.0000	1.000	1.0000	1.0000						
50			1.0000	1.000	1.0000	1.0000						
100			1.0000	1.000	1.0000	1.0000						
48h Su	rvival I	Rate Binomials										
Conc-%	<u>′</u>	Code	Rep 1	Rep 2	2 Rep 3	Rep 4						
0		D	10/10	10/10	10/10	10/10						
6.25			10/10	10/10	10/10	10/10						
40 -			40/40	4-44-		40440						

Analyst:_____ QA:____

12.5

25

50

100

10/10

10/10

10/10

10/10

10/10

10/10

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10/10

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10/10

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Report Date: Test Code/ID:

08 Oct-18 14:46 (p 2 of 2) 18-1422a / 15-1817-3363

Mysidopsis 96-h Acute Survival Test

New England Bioassay

Analysis ID: 16-8242-5088 **Analyzed:** 08 Oct-18 14:46

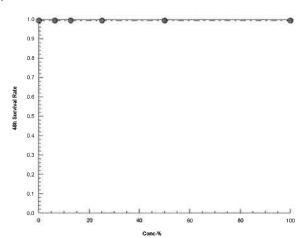
Endpoint: 48h Survival Rate
Analysis: Linear Interpolation (ICPIN)

CETIS Version: Status Level:

CETISv1.9.4

1

Graphics



CETIS™ v1.9.4.1

Analyst:_____ QA:

16 of 30

NEB Issued:10/9/2018

000-222-335-4

Report Date: Test Code/ID: 08 Oct-18 14:46 (p 1 of 2) 18-1422a / 15-1817-3363

Mysidopsis 96-h	Acute Surviv	val Test							N	ew Englar	nd Bioassa
,	-8632-3953 Oct-18 14:46		dpoint: alysis:	48h Survival Ra Nonparametric		Treatments		IS Version us Level:	: CETISv1	1.9.4	
Batch ID: 02-	-5224-6727	Te	st Type:	Survival (48h)			Anal	yst:			
Start Date: 20	Sep-18 15:56	5 Pr	otocol:	EPA/821/R-02-	012 (2002)	Dilue	ent: Re	ceiving Wate	er	
Ending Date: 22	Sep-18 16:15	5 Sp	ecies:	Mysidopsis bah	nia		Brine	e: ins	tant Ocean		
Test Length: 48	h	Та	xon:	Malacostraca			Sour	rce: In-	House Cultu	re	Age: 3 d
Sample ID: 18-	-9760-4044	Co	de:	711B23CC			Proje				
Sample Date: 20	Sep-18 11:50		iterial:	Not Applicable			Sour	rce: Gu	If Oil Termin	al (MA000°	1091)
Receipt Date: 20	Sep-18 14:05	5 CA	S (PC):				Stati	on:			
Sample Age: 4h		Cli	ent:	Eurofins							
Data Transform		Alt Hyp					NOEL	LOEL	TOEL	TU	
Angular (Corrected	d)	C > T					100	>100	n/a	1	
Steel Many-One F	Rank Sum Te	est									
Control vs	Conc-%		Test S			F P-Type	P-Value	Decision			
Dilution Water	6.25		18	10	1 6		0.8333	_	nificant Effec		
	12.5		18	10	1 6		0.8333	_	nificant Effec		
	25		18	10	1 6		0.8333	_	nificant Effec		
	50 100		18 18	10 10	1 6	,	0.8333 0.8333	-	nificant Effec nificant Effec		
ANOVA Table						7.1031111		110.1 0.19.	mount Endo		
Source	Sum Squ	arae	Mean	Square	DF	F Stat	P-Value	Decision	n(a:5%)		
Between	0	a163	0	Oquare	5	65540	<1.0E-37	Significa	<u> </u>		
Error	0		0		18	00040	11.02.07	Olgrinioa	in Lincol		
Total	0				23	=					
48h Survival Rate	e Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UC	L Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
Angular (Correct	ed) Transfor	med Sum	тагу								
Conc-%	Code	Count	Mean	95% LCL			Min	Max	Std Err	CV%	%Effect
0	D	4	1.412	1,412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
6.25		4	1.412	1,412	1.412	1,412	1.412	1.412	0	0.00%	0.00%
12.5		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
25		4	1.412	1.412	1.412	1.412	1.412	1,412	0	0.00%	0.00%
50		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
100		4	1.412	1,412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
	e Detail										
48h Survival Rate		Rep 1	Rep 2	Rep 3	Rep 4						
Conc-%	Code				4 0000						
Conc-%	Code 	1.0000	1.0000		1.0000						
Conc-% 0 6.25		1.0000 1.0000	1.0000	1.0000	1.0000						
Conc-% 0 6.25 12.5		1.0000	1.0000 1.0000	1.0000 1 _{.0} 000	1.0000 1.0000						
Conc-% 0 6.25 12.5		1.0000 1.0000	1.0000	1.0000 1 _{.0} 000	1.0000						
48h Survival Rate Conc-% 0 6.25 12.5 25		1.0000 1.0000 1.0000	1.0000 1.0000	1.0000 1.0000 1.0000	1.0000 1.0000						

Analyst:_____QA:____

Report Date: Test Code/ID:

08 Oct-18 14:46 (p 2 of 2) 18-1422a / 15-1817-3363

New England Bioassay

Mysidopsis	96-h Acute	Survival	Test

Analysis ID: 19-8632-3953 Endpoint: 48h Survival Rate

1.412

1.412

CETIS Version: CETISv1.9.4

Analyzed: 08 Oct-18 14:46

Analysis: Nonparametric-Control vs Treatments

1.412

Status Level: 1

Angular (Cori	rected) Transfo	ormed Deta	if		
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.412	1.412	1.412	1.412
6.25		1.412	1.412	1.412	1.412
12.5		1.412	1.412	1.412	1.412
25		1.412	1,412	1.412	1.412
50		1.412	1.412	1.412	1.412

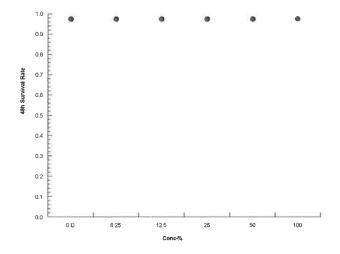
1.412

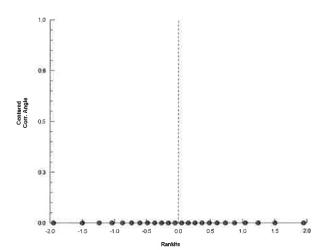
48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Graphics

100





000-222-335-4

CETIS™ v1.9.4.1

Analyst:____ QA:

NEW ENGLAND BIOASSAY Toxicity Test Data Sheet

NEB Test #:	18-1422b	Test Organism:		Mer	nidia beryi	lina
Project #:	05.0045469.00	Organism Age:			11	days
Facility Name:	Gulf Terminal - Chelsea, MA	Test Duration:	48	3	(hours)	
Date Sampled:	9/20/18	Beginning Date:	9/20	/18	_Time: _	1559
Date Received:	9/20/18	Dilution Water S	ource: _		Chelsea	River
Sample ID:	Outfall 003	Salinity:		27		ppt

Effluent Conc.	8	umber o Survivin	g	_	issolve Oxygen		Те	mperati (°C)	ure		pH (su)			Salinity (ppt)	'
%	0	rganisn	าร		(mg/L)										
Initials	0	TBP	PD	PD	DD	CW	PD	DD	CW	PD	DD	CW	PD	DD	CW
	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control A	10	10	10	7.3	6.6	6.4	25.0	24.0	24.0	8.0	8.0	8.0	25	25	25
Control B	10	10	10		6.5	6.3		24.0	24.1		8.1	8.0		25	25
Control C	10	10	10		6.5	6.1		24.0	24.1		8.1	8.0		25	26
Control D	10	10	10		6.4	5.9		24.0	24.1		8.1	8.0		25	25
Diluent A	10	10	9	7.3	6.6	6.0	26.0	24.0	24.1	7.7	7.9	7.9	27	27	27
Diluent B	10	10	10		6.5	6.1		24.0	24.3		7.9	7.9		27	27
Diluent C	10	10	10		6.5	6.0		24.0	24.3		7.9	7.9		27	27
Diluent D	10	10	10		6.5	6.0		24.1	24.1		7.9	7.9		27	27
6.25 A	10	10	10	7.3	6.6	6.1	25.9	24.0	24.3	7.8	7.9	7.9	27	27	27
6.25 B	10	10	10		6.5	6.1		24.0	24.2		7.9	7.9		27	27
6.25 C	10	10	8		6.4	6.0		24.0	24.2		7.9	7.9		27	27
6.25 D	10	10	10		6.3	5.9		24.0	24.2		7.9	7.9		27	27
12.5 A	10	10	10	7.2	6.5	5.9	26.0	24.2	24.3	7.8	7.9	7.9	27	27	27
12.5 B	10	10	10		6.4	6.0		24.1	24.4		7.9	7.9		27	27
12.5 C	10	10	10		6.4	5.9		24.0	24.3		7.9	7.9		27	27
12.5 D	10	10	9		6.4	5.9		24.3	24.3		7.9	7.9		27	27
25 A	10	10	10	7.2	6.4	6.0	26.0	24.3	24.5	7.8	7.9	7.9	26	26	27
25 B	10	10	10		6.3	6.0		24.0	24.4		7.9	7.9		26	27
25 C	10	10	10		6.3	5.9		24.1	24.4		7.9	7.9		26	27
25 D	10	10	10		6.4	5.9		24.2	24.4		7.9	7.9		26	27

40.00	LC50	Confidence Interval	A-NOEC	Computational Method
5	>100%	100%±∞	100%	Graphical

NEW ENGLAND BIOASSAY Toxicity Test Data Sheet

NEB Test #:	18-1422b	Test Organism:		Ме	nidia bery	llina
Project #:	05.0045469.00	Organism Age:			11	days
Facility Name:	Gulf Terminal - Chelsea, MA	Test Duration:	48	3	_(hours)	
Date Sampled:	9/20/18	Beginning Date:	9/20	/18	_Time:	1559
Date Received:	9/20/18	Dilution Water S	Source: _		Chelse	a River
Sample ID:	Outfall 003	Salinity:		27		ppt

Effluent Conc. %	5	umber o Survivin Irganisn	g		issolve Oxygen (mg/L)		Те	mperati (°C)	ıre		pH (su)			Salinity (ppt)	
Initials	0	TBP	PD	PD	DD	cw	PD	DD	CW	PD	DD	cw	PD	DD	CW
ELECTION OF THE	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
50 A	10	10	10	7.2	6.4	5.9	25.9	24.0	24.3	7.9	8.0	8.0	25	26	26
50 B	10	10	10		6.3	5.9		24.2	24.4		8.0	8.0		26	26
50 C	10	10	10		6.4	5.9		24.1	24.4		8.0	8.0		26	26
50 D	10	10	10		6.4	5.9		24.0	24.4		8.0	8.0		26	26
100 A	10	10	10	7.3	6.5	5.9	25.8	24.0	24.4	8.0	8.1	8.0	24	24	24
100 B	10	10	10		6.4	5.8		24.1	24.3		8.1	8.1		24	24
100 C	10	10	9		6.3	5.9		24.1	24.3		8.1	8.1		24	24
100 D	10	10	10		6.3	5.9		24.2	24.3		8.1	8.1		24	24

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

Report Date:

08 Oct-18 14:48 (p 1 of 2)

J	, , , , , ,	nytical rept										Test	Code/ID):	1	8-1422b /	17-8361-08
Inland	Silvers	side 96-h Acute \$	Survival	Test											١	lew Engla	nd Bioassa
Analys	is ID:	19-2395-0108	E	ndpo	oint:	48h	Survival Ra	te				CET	IS Versi	on:	CETISv	1,9.4	
Analyz	ed:	08 Oct-18 14:47	Α	nalys	sis:	Line	ear Interpola	tion (ICPIN)			State	us Level	:	1		
Batch I	D:	01-6270-9666	Т	est T	ype:	Sun	vival (48h)					Anal	yst:				
Start D	ate:	20 Sep-18 15:59) P	rotoc	ol:	EP/	N821/R-02-0	012 (2002)				Dilue	ent: l	Rece	eiving Wat	er	
Ending	Date:	22 Sep-18 16:11	S	pecie	es:	Mer	nidia beryllin	a				Brine	e: l	insta	int Ocean		
Test Le	ength:	48h	Т	axon	:	Acti	nopterygii					Sour	rce:	ln-He	ouse Cultu	ire	Age: 11
Sample	e ID:	09-0721-2998	С	ode:		361	2F8C6					Proje	ect:				
Sample	Date:	20 Sep-18 11:50) N	lateri	al:	Not	Applicable					Sour	rce: (Gulf	Oil Termir	nal (MA000)1091)
Receip	t Date:	20 Sep-18 14:05	5 C	AS (F	PC):							Stati	on:				
Sample	Age:	4h	С	lient	:	Euro	ofins										
Linear	Interp	olation Options															
X Trans	sform	Y Transform	ı S	eed		Res	amples	Exp 95%	CL	Meth	od						
Log(X)		Linear	2	02242	26	200		Yes		Two-	Point I	nterp	olation				
Point E	stimat	tes															
Level	%	95% LCL	95% U	CL 1	ru		95% LCL	95% UCL									
LC50	>100	n/a	n/a	<	<1		n/a	n/a									
48h Su	rvival	Rate Summary						Calcu	lated	Varia	te(A/B)				Isoto	onic Variate
Conc-%	6	Code	Count	N	Vlean		Min	Max	Std	Dev	CV%	Ó	%Effe	ct	A/B	Mean	%Effec
0		D	4	C	0.9750)	0.9000	1.0000	0.0	500	5.13	%	0.0%		39/40	0.98	0.0%
6.25			4	C	0.9500)	0.8000	1.0000	0.10	000	10.5	3%	2.56%		38/40	0.98	0.0%
12.5			4		0.9750		0.9000	1.0000	0.0		5.13		0.0%		39/40	0.98	0.0%
25			4	1	1.0000)	1.0000	1.0000	0.00		0.00		-2.56%		40/40	0.98	0.0%
50			4		1.0000		1.0000	1.0000	0.00		0.00		-2.56%	6	40/40	0.98	0.0%
100			4		0.9750		0.9000	1.0000	0.0	500	5.13	% ——	0.0%		39/40	0.975	0.51%
48h Su	rvival	Rate Detail															
Conc-%	6	Code	Rep 1		Rep 2		Rep 3	Rep 4									
)		D	0.9000		1.0000		1.0000	1.0000									
5.25			1.0000		1.0000		0.8000	1.0000									
12.5			1.0000		1.0000		1.0000	0.9000									
25			1.0000		1.0000		1.0000	1.0000									
50			1.0000		1.0000		1.0000	1.0000									
100			1.0000	1	0000.1)	0.9000	1.0000									
48h Su	rvival	Rate Binomials															
Conc-%	6	Code	Rep 1		Rep 2		Rep 3	Rep 4									
0		D	9/10		0/10		10/10	10/10									
6.25			10/10		0/10		8/10	10/10									
12.5			10/10	1	0/10		10/10	9/10									

CETIS™ v1.9.4.1 Analyst:_____ QA:____

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Report Date:

08 Oct-18 14:48 (p 2 of 2) 18-1422b / 17-8361-0869

Test Code/ID: Inland Silverside 96-h Acute Survival Test

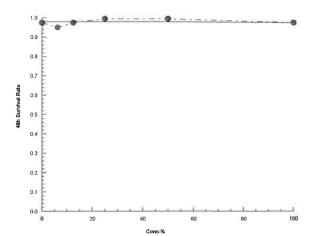
New England Bioassay

Analysis ID: 19-2395-0108 08 Oct-18 14:47 Endpoint: 48h Survival Rate Analysis: Linear Interpolation (ICPIN) **CETIS Version:** Status Level:

CETISv1.9,4 1

Analyzed: Graphics

000-222-335-4



CETIS™ v1.9.4.1

Analyst:_ QA:

Report Date: Test Code/ID: 08 Oct-18 14:48 (p 1 of 2) 18-1422b / 17-8361-0869

												-9/			
Inland Silver	side 9	6-h Acute S	Survival	Test									N	ew Englan	d Bioassa
Analysis ID:	07-6	037-8006		Endpoint:	48h	Survival Ra	ate			CE	TIS Versi	ion:	CETISv1	.9.4	
Analyzed:	08 C	oct-18 14:47		Analysis:	Non	parametric-	Control	vs T	reatments	Sta	tus Leve	d:	1		
Batch ID:	01-6	270-9666	-	Test Type:	Sun	vival (48h)				An	alyst:				
Start Date:	20 S	Sep-18 15:59		Protocol:	EPA	V821/R-02-	012 (200	02)		Dil	uent:	Rece	iving Wate	er	
Ending Date:	: 22 S	ep-18 16:11		Species:	Men	nidia beryllin	a			Bri	ne:	Insta	nt Ocean		
Test Length:				Гахоп:	Acti	nopterygii				So	ırce:	In-Ho	ouse Cultur	e	Age: 11
On-male ID:	00.0	724 2000		3 - d	264	25006		_		D					
Sample ID: Sample Date		721-2998		Code:		2F8C6 Applicable					ject:	Cut.	Oil Tormin	al (MA0001	001)
Sample Date Receipt Date		•		Viaterial:	NOL	Applicable					urce: tion:	Guii	Oir remina	ai (IVIAUUU I	091)
Sample Age:		ep-16 14.00		CAS (PC): Client:	Fur	ofins				Sta	uon.				
Sample Age.	. 411			Jilent.	Luit	JIIIIS									
Data Transfo			Alt Hy	/p						NOEL	LOEL		TOEL	TU	PMSD
Angular (Corr	rected)		C > T							100	>100		n/a	1	9.09%
Steel Many-C	One R	ank Sum Te	st												
Control	vs	Conc-%		Test S	Stat	Critical	Ties	DF	P-Type	P-Value	Decis	ion(c	x:5%)		
Dilution Wate	r	6.25		17.5		10	1	6	Asymp	0.7867	Non-S	Signifi	icant Effect	t	
		12.5		18		10	2	6	Asymp	0.8333	Non-S	Signifi	icant Effect	t	
		25		20		10	1	6	Asymp	0.9516	Non-S	Signifi	icant Effect	t	
		50		20		10	1	6	Asymp	0.9516	Non-S	Signifi	icant Effect	t	
		100		18 ,		10	2	6	Asymp	0.8333	Non-S	Signifi	icant Effect	<u> </u>	
ANOVA Table	е														
Source		Sum Squa	res	Mean	Squ	are	DF		F Stat	P-Value	Decis				
Between		0.016902		0.003	3804		5		0.47	0.7937	Non-S	Signifi	icant Effect	t	
Error		0.129467		0.007	1926		18								
Total		0.146369					23								
Distributiona	al Test	s													
Attribute		Test					Test S	tat	Critical	P-Value	Decis	ion(c	x:1%)		
Variances		Levene Eq	uality of	Variance 7	Test		4.23		4.248	0.0102	Equal	Varia	ances		
Variances				lity of Varia		Γest	0.47		4.248	0.7937	Equal	Varia	ances		
Distribution		Shapiro-W	ilk W N	ormality Te	st		0.7605	i	0.884	7.1E-05	Non-N	Norma	al Distributi	on	
48h Survival	Rate	Summary													
Conc-%		Code	Count	Mean		95% LCL	95% U	CL	Median	Min	Max		Std Err	CV%	%Effect
0		D	4	0.975	0	0.8954	1.0000)	1.0000	0.9000	1.000	0	0.0250	5.13%	0.00%
6.25			4	0.950		0.7909	1.0000		1.0000	0.8000	1.000		0.0500	10.53%	2.56%
12.5			4	0.975		0.8954	1.0000		1.0000	0.9000	1.0000		0.0250	5.13%	0.00%
25			4	1.000		1.0000	1.0000		1.0000	1.0000	1.0000		0.0000	0.00%	-2.56%
50			4	1.000		1.0000	1.0000		1.0000	1.0000	1.0000		0.0000	0.00%	-2.56%
1OO			4	0.975	U	0.8954	1.0000) ——	1.0000	0.9000	1:0000	U	0.0250	5.13%	0.00%
100		4) Transform	ned Su	mmary											
Angular (Cor	recte	-		_				\sim 1	Median	Min	Max		Ctd Err	C) /0/	%Effect
Angular (Cor Conc-%	recte	Code	Count			95% LCL	95% U	<u>CL</u>					Std Err	CV%	
Angular (Cor Conc-%	recte	-	Count 4	1.371		1.242	1.501	CL	1.412	1.249	1.412		0.04074	5.94%	0.00%
Angular (Cor Conc-% 0 6.25	recte	Code		1.371 1,336		1.242 1.093	1.501 1.578	CL	1.412 1.412	1.249 1.107	1.412 1.412		0.04074 0.07622	5.94% 11.41%	0.00% 2.59%
Angular (Cor Conc-% 0 6.25	recte	Code	4	1.371		1.242	1.501	CL	1.412	1.249	1.412		0.04074	5.94%	0.00%
100 Angular (Cor Conc-% 0 6.25 12.5 25	recte	Code	4	1.371 1,336		1.242 1.093	1.501 1.578	CL	1.412 1.412	1.249 1.107	1.412 1.412		0.04074 0.07622	5.94% 11.41%	0.00% 2.59%
Angular (Cor Conc-% 0 6.25 12.5	recte	Code	4 4 4	1.371 1,336 1.371		1.242 1.093 1.242	1.501 1.578 1.501	<u>CL</u>	1.412 1.412 1.412	1.249 1.107 1,249	1.412 1.412 1.412		0.04074 0.07622 0.04074	5.94% 11.41% 5.94%	0.00% 2.59% 0.00%

000-222-335-4

CETIS™ v1.9.4.1

Analyst:_____ QA:____

Report Date: Test Code/ID: 08 Oct-18 14:48 (p 2 of 2) 18-14226 / 17-8361-0869

New England Bioassay

Analysis ID: 07-6037-8006

Inland Silverside 96-h Acute Survival Test

Endpoint: 48h Survival Rate **CETIS Version:** CETISv1,9.4

Analyzed: 08 Oct-18 14:47 Analysis: Nonparametric-Control vs Treatments Status Level:

1

48h	Survival	Rate	Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0,9000	1.0000	1.0000	1.0000
6.25		1,0000	1.0000	0.8000	1.0000
12.5		1.0000	1,0000	1.0000	0.9000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.9000	1.0000

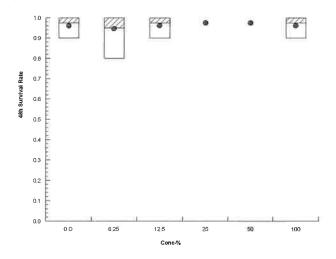
Angular (Corrected) Transformed Detail

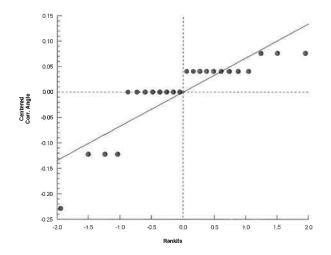
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.249	1.412	1.412	1.412
6.25		1.412	1.412	1.107	1.412
12.5		1.412	1.412	1,412	1.249
25		1.412	1,412	1.412	1,412
50		1.412	1,412	1.412	1.412
100		1.412	1.412	1.249	1,412

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	D	9/10	10/10	10/10	10/10	
6.25		10/10	10/10	8/10	10/10	
12.5		10/10	10/10	10/10	9/10	
25		10/10	10/10	10/10	10/10	
50		10/10	10/10	10/10	10/10	
100		10/10	10/10	9/10	10/10	

Graphics





000-222-335-4

CETIS™ v1.9.4.1 24 of 30

QA: Analyst:_

INITIAL CHEMISTRY INFORMATION

CLIENT: PROJECT #

Gulf Terminal - Chelsea, MA

05.0045469.00

RECIEPT DATE	9,	/20/18
SAMPLE	Effluent	Receiving Water
COC#	C38-3632	C38-3632
Temperature (°C)	14.6	14.3
Dissolved Oxygen (mg/L)	9.4	8.2
pH (standard units)	6.6	7.6
Conductivity (µmhos/cm)	251	42,820
Salinity (ppt)	<1	27
Hardness (as mg/L CaCO3)	46	5000
Alkalinity (as mg/L CaCO3)	40	100
TRC - DPD (mg/L)	0.175*	0.022
INITIALS	КО	КО

Additional notes:

Eff - 546g of IO added to \sim 20L of effluent to bring salinity up to 24ppt

^{* 0.182} mg/L after addition of salt, <0.05 mg/L when run using amperometric titration.

NEB SALTWATER SPECTS ACCLIMATION RECORD

Species: Menidia beryllina	Client: Test ID:	Quantity: 1000	*Mortality upon arrival
Source:	LOT#: 55(8AI(9-18)	Age:	
Aquatic Indicators		9 days on 9-18-18	* Mortality > 10% - Notify management
200			

Species: Menidia beryllina	a		Client: Test ID:					Quantity:	000/		*Mortality upon arrival
Source:			Lot #: S	LOT#: 5518AI (9-18)	(4-18)			Age:			
Aquatic Indicators	(0)							9 20	days on 9-18-18	8-18	* Mortality > 10% - Notify management
Allowable Mortality:		rtality = No	> 5% mortality = Notify management.	ement.					2		
Allowable Acclimation:	Fish = No	more than	Fish = No more than 50% tank volume water change over a	volume wa	iter chang	e over a	12 (twelve) hour period,	nour period.			
	Mysids =	Need to be	Mysids = Need to be +/- 2 ppt of test dilution water.	of test diluti	on water.						
	Wate	Water Chemistry	itry					Ŏ	Observations		
Date	D.O. (mg/L)	p.H. (SU)	Temp. (C) *	Alkal. (mg/L) ml titrant	Sal. (ppt) **	ř	Feedings	Behavioral	Do al organisms ns look stressed?	Mortalities	Comments / Treatment type
26						AM	NOON PM	A = Normal, B = Erratic mov. C = Dead	ov. Yes / No	# of dead organisms removed from tank	E E E E E E E E E E E E E E E E E E E
81-81-6 5 of 30	14.4	h:L	23.66	33.60 195 3,9 ml	35	4 to	Kr. Kr.	*	No	٥	Acclimated to ASW
81-61-18	6.9		34.5		75	2	T IN	A(C	Z	12	HO DW/ 6L ASW
9-50-18	(e.9)		23.4		27	艾	Syl				
	1	à									
NEB Is											
sued:1											
0/9/20				18							
18											

Special Handling:	Standard TAT - 7 to 10 business days	☐ Rush TAT - Date Needed:	All TATs subject to laboratory approval Min. 24-hr notification needed for rushes Samples disposed after 30 days unless otherwise instructed.		Gulf Chelsen Terminal	Chelsee State HA	Aleksender Marinkovic		* additional charges may appply	MA DEP MCP CAM Report? X Yes No	CT DPH RCP Report? Yes	*A <u>i</u>	K if ch	Other: Charactering grandarde:									Send report to 1.	9	2	pt: Custody Seals: Present Intact Broken	ed 🔲 Refrigerated 🔝 DI VOA Frozen 🔛 Soil Jar Frozen	Decfrum Rev. Nov 2016
	4	K		Project No:		Ţ.	Sampler(s):	List Preservative Code below:		Analysis													•C EDD format:	E-mail to:	actor	Condition upon receipt:	Ambient Iced	Drive - Agawam, MA 01001 - 413-789-9018 - www.EurofinsUS.com/Spectrum
		OF CUSTODY RECORD			Chart Collection	2481-3765		(2U.)	Ξ		(25	ס־,	7	>	>							Temp °C	Observed	Corecction Factor	Соттестве	R D.≱	89-9018 • 1
		OY K	- 504	二江		0.				iers			oitsel ^o	I Jo #		_							Time:	204				01 · 413-7
	Ę		of 1	ber (0.1	cy MA	Quote #:			Containers			Amber Near C											20			-	, MA 0100
	OTIO		1	1 Fistopher	3	1 2		pi				slai	7 AO\	\ Jo #									Date:	1.02.				Agawam
			Page	Ch	30	(Local		6=Ascorbic Acid	ķ			Ĩ	xin	YT isM	WS B	₩ S 3								6				n Drive
	CITATIO	CHAIN		Invoice To:	Į, Į,	Į į	P.O No.:	=NaOH		WW=Waste Water	1 Gas		1156,	Time:	10000000000000000000000000000000000000	1205,							by: A	~				ess: 11 Almgrer
		:	alytical	19	6/ 9	2.0		4=HNO ₃ 5		1	t Air SG=Soil Gas	#X3	C=Compsite	Date:	81-08-6	9-20-18							Received by:	15/m				Sample shipping address: 11 Almgren
		•	um An	SV	Ave	02150	2480	3=H ₂ SO ₄ 10=H ₃ PO ₄		SW=Surface Water	A=Indoor/Ambient Air				003									NO				Sample
	1 24		Spectrum Analytical	notrew Adems	Fostern	Sec. MA.	617 - 884- A. Adams	$1=\mathrm{Na}_2\mathrm{S2O}_3$ $2=\mathrm{HCl}$ $3=\mathrm{H}_2\mathrm{SO}_4$ ISO ₄ 9=Deionized Water $10=\mathrm{H}_3\mathrm{PO}_4$		GW=Groundwater	SL=Sludge A=Indo	X2=	irab	Sample ID:	Outtell	Creek			Received	ON ICE			thed by:					
	Se Purnfine			Report To:	Sol.	Ö	Telephone #: Project Mgr:	F=Field Filtered 1=Na 7=CH3OH 8=NaHSO ₄		DW=Drinking Water	0=Oil S0=Soil	XI=	G= Grab	Lab ID:	038-3632	138-3633							Refinquished by:	My	11			
	•	9								_				27 of	30	ل	*	4,							NEB	 Issue	d:10/9/	 /201



SUBCONTRACT ORDER

SC50648

Spectrum Analytical

SENDING LABORATORY:

Eurofins Spectrum Analytical, Inc.

11 Almgren Drive Agawam, MA 01001 Phone: (413) 789-9018 Fax: (413) 789-4076

PM: SpectrumLabResults@EurofinsUS.com

Project: Gulf Terminal - Chelsea, MA

RECEIVING LABORATORY:

GZA Geoenvironmental, Inc. - Manchester, CT*

77 Batson Drive

Manchester, CT 06042 Phone: (860) 286-8900 Fax: (860) 242-8389

BILL TO:

Eurofins Spectrum Analytical, Inc.

2425 New Holland Pike Lancaster, PA 17601

Attention: Accounts Payable accountspayable@eurofinsus.com

PO Number: SC50648

Project #:

[none]

PO Number: SC50648

Laboratory ID	Sample ID	Sampled	Matrix	Analysis	Due	Comments
	SC50648-01	20-Sep-18 11:50	Surface Water	Aquatic Tox	04-Oct-18 16:00	Client ID is Outfall 003
Containers Supplied:	_					
/2 Gallon Jug (A)						
	SC50648-02	20-Sep-18 12:05	Surface Water	Aquatic Tox	04-Oct-18 16:00	Client ID is Creek
Containers Supplied:						
/2 Gallon Jug (A)						

Please send notice within 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration. Notice should be emailed to <u>SpectrumLabResults@EurofinsUS.com</u>.

Please notify <u>SpectrumLabResults@EurofinsUS.com</u> immediately and prior to conducting analysis if certification is not held for the analyses requested.

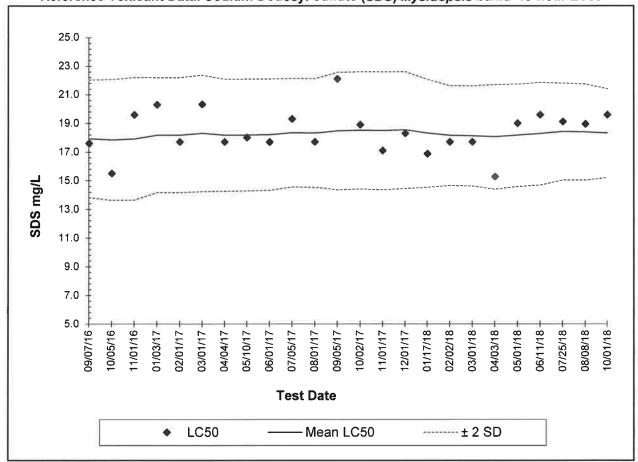
Please e-mail results in electronic format to SpectrumLabResults@EurofinsUS.com.

Released By	Date	Received By		Date	Temp °C
Released By	Date	Received By	1	Date	

Page 1 of 1

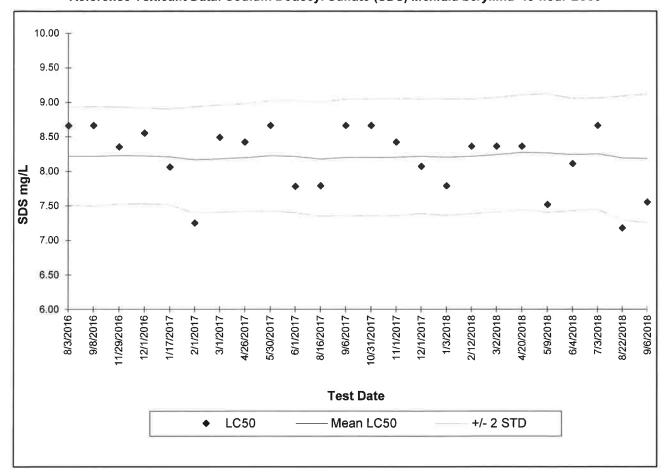
New England Bioassay

Reference Toxicant Data: Sodium Dodecyl Sulfate (SDS) Mysidopsis bahia 48-hour LC50



								CV National
Test iD	Date	LC ₅₀	Mean LC ₅₀	STD	-2STD	+2STD	CV	75th & 90th%
16-1256	9/7/2016	17.6	17.9	2.1	13.8	22.0	0.13	0.26
16-1471	10/5/2016	15.5	17.8	2.1	13.6	22.1	0.11	0.26
16-1590	11/1/2016	19.6	17.9	2.1	13.6	22.2	0.12	0.26
17-9	1/3/2017	20.3	18.2	2.0	14.2	22.2	0.12	0.26
17-154	2/1/2017	17.7	18.2	2.0	14.2	22.2	0.11	0.26
17-273	3/1/2017	20.3	18.3	2.0	14.2	22.4	0.11	0.26
17-479	4/4/2017	17.7	18.2	2.0	14.3	22.1	0.11	0.26
17-697	5/10/2017	18.0	18.2	2.0	14.3	22.1	0.11	0.26
17-776	6/1/2017	17.7	18.2	1.9	14.3	22.1	0.11	0.26
17-977	7/5/2017	19.3	18.3	1.9	14.6	22.1	0.11	0.26
17-1144	8/1/2017	17.7	18.3	1.9	14.5	22.1	0.10	0.26
17-1329	9/5/2017	22.1	18.5	2.0	14.4	22.6	0.10	0.26
17-1520	10/2/2017	18.9	18.5	2.0	14.4	22.6	0.11	0.26
17-1693	11/1/2017	17.1	18.5	2.1	14.4	22.6	0.11	0.26
17-1804	12/1/2017	18.3	18.5	2.0	14.5	22.6	0.11	0.26
18-92	1/17/2018	16.9	18.3	1.9	14.6	22.1	0.11	0.26
18-188	2/2/2018	17.7	18.2	1.7	14.7	21.6	0.10	0.26
18-294	3/1/2018	17.7	18.1	1.7	14.6	21.6	0.10	0.26
18-469	4/3/2018	15.3	18.1	1.8	14.4	21.7	0.10	0,26
18-612	5/1/2018	19.0	18.2	1.8	14.6	21.7	0.10	0.26
18-815	6/11/2018	19.6	18.3	1.8	14.7	21.8	0.10	0.26
18-1086	7/25/2018	19.1	18.4	1.7	15.1	21.8	0.09	0.26
18-1156	8/8/2018	19.0	18.4	1.7	15.1	21.7	0.09	0.26
18-1470	10/1/2018	19.6	18.3	1.5	15.2	21.4	0.08	0.26

New England Bioassay Reference Toxicant Data: Sodium Dodecyl Sulfate (SDS) Menidia beryllina 48-hour LC50



								CV National	CV National
Test ID	Date	LC ₅₀	Mean LC ₅₀	STD	-2STD	+2STD	CV	75th%	90th%
16-1060	8/3/2016	8.66	8.21	0.36	7.50	8.93	0.04	0.21	0.44
16-1282	9/8/2016	8.66	8.21	0.36	7.49	8.94	0.04	0.21	0.44
16-1705	11/29/2016	8.35	8.23	0.35	7,52	8.93	0.04	0.21	0.44
16-1739	12/1/2016	8.55	8.22	0.35	7,53	8.92	0.04	0.21	0.44
17-83	1/17/2017	8.06	8.21	0.35	7.52	8.90	0.04	0.21	0.44
17-155	2/1/2017	7.25	8.16	0.39	7.39	8.93	0.05	0.21	0.44
17-278	3/1/2017	8.49	8.18	0.39	7.40	8.96	0.05	0.21	0.44
17-595	4/26/2017	8.42	8.20	0.39	7.42	8.98	0.05	0.21	0.44
17-758	5/30/2017	8.66	8.22	0.40	7.42	9.02	0.05	0.21	0.44
17-777	6/1/2017	7.78	8.21	0.41	7.40	9.03	0.05	0.21	0.44
17-1246	8/16/2017	7.79	8.18	0.41	7.35	9.00	0.05	0.21	0.44
17-1340	9/6/2017	8.66	8.20	0.42	7.35	9.05	0.05	0.21	0.44
17-1685	10/31/2017	8.66	8.20	0.42	7.35	9.05	0.05	0.21	0.44
17-1694	11/1/2017	8.42	8.20	0.42	7,36	9.05	0.05	0.21	0.44
17-1805	12/1/2017	8.07	8.22	0.42	7.38	9.05	0.05	0.21	0.44
18-17	1/3/2018	7.79	8.20	0.42	7.36	9.05	0.05	0.21	0.44
18-222	2/12/2018	8.36	8.22	0.42	7.39	9.05	0.05	0.21	0.44
18-295	3/2/2018	8.36	8.24	0.42	7.41	9.07	0.05	0,21	0.44
18-552	4/20/2018	8.36	8.27	0.42	7.44	9.10	0.05	0.21	0.44
18-655	5/9/2018	7.52	8.26	0.43	7.40	9.12	0.05	0.21	0.44
18-754	6/4/2018	8.11	8.24	0.41	7.43	9.05	0.05	0,21	0.44
18-916	7/3/2018	8.66	8.25	0.40	7.45	9.06	0.05	0.21	0.44
18-1182	8/22/2018	7.18	8.19	0.45	7.30	9.09	0.05	0.21	0.44
18-1307	9/6/2018	7.55	8.18	0.47	7.25	9.11	0.06	0.21	0.44

10001	ヘノつ	
	30	

* Am	Residence by:	ON ICE	38-3632 Outrall 38-3633 Creek	er GW=Groundw 1 SL=Sludge 3= Grab Sample	Report To: Andrew Adems Cuif Oil 281 Eastern Ave. Chelsee MA. O21 Telephone #: 617-884-5780 Project Mgr: A. Adams F=Field Filtered 1=Na ₂ S2O ₃ 2=HCl 3=H ₂ SO ₄ 7=CH3OH 8=NaHSO ₄ 9=Deionized Water 10=H ₃ PO ₄	eurofins Spec
Je flux	Received by:	2	81-20-18	SW=Surface Water ndoor/Ambient Air SG= x C=Comp	5-0 4-HNO ₃ 5-Na	C) Spectrum Analytical
9-20-18	O Date:		1205 C SW	Soil Gas Soil Gas Soil Gas Type Matrix # of VOA Vials # of Amber Glass	ONO: Christopher Cule Oi So Willia Wellested Ono: Ono: Ono 6-Ascorbic Acid NE 12-	CHAIN OF CUSTODY RECOR
	Time: Temp °C			# of Clear Glass # of Plastic LC 50	Street Suite 41	DDY RECORD
E-mail to: CAN 1-{CAN 1	EDD format: SCAD PROCETT TO 1		0 SC Se 648	Analysis MA DEP MCP CAM Report? Yes CT DPH RCP Report? Yes Standard No QC. DQA* BSP A* N Reduced* N Reduced* N Reduced* N Full* Wher II* State-specific reporting standards:	Project No: Project No: OS Site Name: OS Location: Alcks ender Merinkeric State: M Sampler(s): Alcks ender Merinkeric OA/OC Reporting Notes: * additional charges may appoint	Special Handling: X Standard TAT - 7 to 10 business days Rush TAT - Date Needed: All TATs subject to laboratory approval Min. 24-hr notification needed for rushes Samples disposed after 30 days unless otherwise instructed.